Key to the Genera of the Family Capitellidae

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Definitions

TF - Thoracic Formula (see key below)

1. Thorax with a true achaetous segment present
   1a. Thorax with 10 chaetigers with capillary chaetae; abdominal hooded hooks with many small teeth above the main fang; pygidium unknown; TF - (-) + (10c)\(\rightarrow\)(0+9c)
   1b. Thorax with 9-14 chaetigers with capillary chaetae; abdominal hooded hooks with many small teeth above the main fang; pygidium with fused segments forming a plaque; TF - (-) + (9-14c)\(\rightarrow\)(8-13c+1c)

2. Thorax with 11 or fewer thoracic chaetigers
   2a. Thorax with 11 or fewer thoracic chaetigers
   2b. Thorax with 12 or more thoracic chaetigers

3. Thorax with 12 or more thoracic chaetigers
   3a. Thorax with 12 or more thoracic chaetigers
   3b. Thorax with 12 or more thoracic chaetigers

4. Thorax lacking capillary chaetae, with hooded hooks only
   4a. Thorax lacking capillary chaetae, with hooded hooks only
   4b. Thorax with capillary chaetae present, hooded hooks may also be present

5. Thorax with 8 chaetigers; TF - (8h)\(\rightarrow\)(8h)
   5a. Thorax with 9 chaetigers; TF - (9h)\(\rightarrow\)(9h)

6. Thorax with 4 or fewer chaetigers with notopodial capillary chaetae
   6a. Thorax with 4 or fewer chaetigers with notopodial capillary chaetae
   6b. Thorax with 5 or more chaetigers with notopodial capillary chaetae

7. Thorax with 4 or more chaetigers with notopodial capillary chaetae, remaining thoracic notopodia with, modified spatulate chaetae, capillary chaetae or hooded hooks
   7a. Thorax with 4 or more chaetigers with notopodial capillary chaetae, remaining thoracic notopodia with, modified spatulate chaetae, capillary chaetae or hooded hooks
   7b. Thorax with 4 or more chaetigers with notopodial capillary chaetae, remaining thoracic notopodia with, modified spatulate chaetae, capillary chaetae or hooded hooks

8. Thorax with 2 chaetigers with notopodial capillary chaetae, remaining notopodia with modified spatulate chaetae; 10 total thoracic chaetigers; TF - (2c+8s)\(\rightarrow\)(2c+8s)
   8a. Thorax with 3 or more chaetigers with notopodial capillary chaetae, remaining notopodia with various combinations of capillary chaetae, spatulate chaetae or hooded hooks; 11 total thoracic chaetigers; TF - (3c+8s)\(\rightarrow\)(0+2c+8s) or (3c+2s+6c)\(\rightarrow\)(3c+2s+6h) or (3c+7s+1h)\(\rightarrow\)(0+2c+7s+1h)

9. Thorax with more than 4 chaetigers; genital spines present or absent; abdominal segments without capillary notochaetae
   9a. Thorax with more than 4 chaetigers; genital spines present or absent; abdominal segments without capillary notochaetae
   9b. Thorax with 4 chaetigers, all thoracic chaetigers with capillary notochaetae; genital spines absent; 1st abdominal segment with mixed fascicle of capillary chaetae and hooded hooks in notopodia; TF - (4c)\(\rightarrow\)(4h) + (1m)\(\rightarrow\)(1h)

10. Thorax with 9-11 chaetigers; genital spines absent
    10a. Thorax with 9-11 chaetigers; genital spines absent
    10b. Thorax with 9 chaetigers; genital spines present in males and hermaphrodites of chaetiger 8 & 9; TF - \(\delta\)\(\tilde{\varphi}\) (4c+3h+2h)\(\rightarrow\)(4c+5h)

Psuedonotmastus

* see comments below †

Scyphoproctus

* see comments below †

Amastigos

Baldia

Undecimastus

Peresiella

Abyssocapitella

Capitella (in part)
11a. (10a) Thorax with 9-11 chaetigers (usually 10); notopodial chaetae sometimes include paddle-like chaetae, in addition to capillary chaetae and hooded hooks; TF - \((4c+6(5-7)h)/(4c+6(5-7)h)\)

11b. Thorax with 11 chaetigers; notopodial chaetae with capillary chaetae and hooded hooks, paddle-like chaetae absent; TF - \((4c+7h)/(4c+7h)\)

12a. (6b) Thorax with 5 chaetigers with capillary notochaetae

12b. Thorax with 6 or more chaetigers with capillary notochaetae.

13a. (12a) Thorax with 9 chaetigers; genital spines present in males and hermaphrodites of chaetiger 8 \& 9; TF - \((5c+2h+2g)/(5c+4h)\) or \((3c+1c(m)+2m+2h)/(3c+2m+2h+2h)\) or \((5c+6h)/(5c+6h)\)

13b. Thorax with 11 chaetigers; genital spines absent; TF - \((5c+6h)/(5c+6h)\)

14a. (12b) Thorax with 6 or 7 chaetigers with capillary notochaetae

14b. Thorax with 8 or more chaetigers with capillary notochaetae.

15a. (14a) Thorax with 9-11 chaetigers; genital spines absent

15b. Thorax with 9 chaetigers; genital spines present in males and hermaphrodites of chaetiger 8 \& 9;

\[ \text{TF} = \begin{cases} \frac{(3c+1c(m)+2m+1m(h)+2g)}{(3c+2m+2h+2h)} & \text{or} \quad \frac{(3c+1c(m)+2m+1m(h)+2g)}{(3c+2m+2h+2h)} \\ \frac{(5c+2c(m)+2g)}{(4c+3c(m)+2h)} & \text{or} \quad \frac{(5c+2c(m)+2g)}{(4c+3c(m)+2h)} \end{cases} \]

16a. (15a) Thorax with 9-10 chaetigers

16b. Thorax with 11 chaetigers; TF - \((6c+1m(h)+4h)/(0+5c+5h)\) or \((6c+1m(h)+4h)/(0+5c+5h)\)

17a. (16a) Chaetiger 1 complete, neuropodia present; TF - \((6c+3(4)h)/(0+6c+4h)\)

17b. Chaetiger 1 incomplete, neuropodia absent; TF - \((5c+1m+4h)/(0+5c+4h)\)

18a. (14b) Thorax with 8 chaetigers with capillary notochaetae

18b. Thorax with 9 or more chaetigers with capillary notochaetae

19a. (18a) Thorax with 8 chaetigers; chaetiger 1 complete, neuropodia present; TF - \((8c)/(8c)\)

19b. Thorax with 11 chaetigers; chaetiger 1 incomplete, neuropodia absent; TF - \((8c+3h)/(0+6c+4h)\)

20a. (18b) Thorax with 10 or more chaetigers with capillary notochaetae

20b. Thorax with 9 chaetigers with capillary notochaetae; TF - \((9c)/(8c+1h)\)

21a. (20a) Thorax with 10 chaetigers with capillary notochaetae, capillary notochaetae may also be present in the anterior abdomen.

21b. Thorax with 11 chaetigers with capillary notochaetae, capillary notochaetae may also be present in the anterior abdomen

22a. (21a) Anterior abdomen without capillary notochaetae, hooded hooks only; 10 total chaetigers with capillary notochaetae; TF - \((10c)/(0+9c)\) or \((10c)/(0+9c)\)

22b. Anterior abdomen with capillary notochaetae in first 2 abdominal chaetigers; 12 total chaetigers with capillary notochaetae; TF - \((10c)/(0+9c)\) or \((1c+1m)/(1m+1h)\)

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**Mediomastus**

* see comments below $

**Parheteromastus**

* see comments below $

**Capitella** (in part)

**Heteromastus**

**Capitella** (in part)

**Neomediomastus**

**Parheteromastides**

* see comments below ♠

**Decamastus**

**Neoheteromastus**

**Octocapitella**

**Neiociapitellides**

* see comments below %

**Neonotomastus**
23a. (21b) Anterior abdominal notopodia without capillary chaetae
23b. Anterior abdominal notopodia with capillary chaetae

24a. (23a) Most abdominal notopodia with notochaetae
24b. Most abdominal notopodia without notochaetae; TF \( (11c)_{/ (11c)} \)

25a. (24a) Abdominal hooded hooks with 2 teeth in basal row; TF \( (11c)_{/ (10c+1e)} \)
25b. Abdominal hooded hooks with more than 2 teeth in basal row; TF \( (11c)_{/ (10c+1e)} + (1(2)e)_{/ (12e+m)} \)

26a. (23b) First 3 or more abdominal chaetigers with capillary notochaetae
26b. First 1 or 2 abdominal chaetigers with capillary notochaetae; TF \( (11c)_{/ (11a) + (1(2)e)_{/ (12e+m)}} \)

27a. (26a) 9 or more anterior abdominal chaetigers with capillary notochaetae
27b. More than 2, but few than 9, anterior abdominal chaetigers with capillary notochaetae; TF \( (11c)_{/ (10c+1e)} + (2e)_{/ (e+2h)} + (11c)_{/ (0+9c+1e)} + (2e)_{/ (e+2h)} \)

28a. (27a) Unknown number of anterior abdominal chaetigers with capillary notochaetae, all thoracic neuropodia with capillary chaetae; TF \( (11c)_{/ (0+10c) + (1m)_{/ (7h)}} \)
28b. 9 or more anterior abdominal chaetigers with capillary notochaetae, last 2 thoracic neuropodia may have hooded hooks; TF \( (11c)_{/ (12e+2e) + (9m)_{/ (e+9h)}} + (11c)_{/ (0+8c+2e) + (9m)_{/ (e+9h)}} \)

29a. (3b) Thorax with 12 thoracic chaetigers
29b. Thorax with 13 or more thoracic chaetigers

30a. (29a) Thorax with 12 chaetigers with notopodial capillary chaetae
30b. Thorax with 10 chaetigers with notopodial capillary chaetae; TF \( (10c+2h)_{/ (10c+2h)} \)

31a. (30a) Prostomium small, usually obscured by peristomium; eyes present as numerous small spots; chaetiger 1 incomplete, neuropodia absent; branchiae absent; TF \( (12c)_{/ (0+9c+2h)} \)
31b. Prostomium rounded or conical; eyespots present or absent; chaetiger 1 complete or incomplete; branchiae present or absent; TF \( (12c)_{/ (10c+2e) + (12c)_{/ (0+9c+2e)}} \)

32a. (29b) Thorax with up to 13 chaetigers
32b. Thorax with 14 or more chaetigers

33a. (32a) Thorax with 13 chaetigers; anterior abdomen with notopodial hooded hooks only
33b. Thorax with 12 or 13 chaetigers; anterior abdomen with notopodial capillary chaetae in variable number of chaetigers; TF \( (12(13)c)_{/ (12(13)c) + (7c)_{/ (7h)}} \)

34a. (33a) Branchiae present
34b. Branchiae absent; TF \( (12c+1m)_{/ (12c+1m)} \)

35a. (34a) Peristomium distinct from prostomium; TF \( (13c)_{/ (13c)} \)
35b. Peristomium partially fused to prostomium; TF \( (13c)_{/ (13c)} \)

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Notomastus

Polymastigos

Neopseudocapitella
* see comments below £

Mastobranchus
* see comments below £

Leiochrides
* see comments below €

Promastobranchus

Leiochirus
* see comments below €

Dasybranchus
* see comments below ‡

Nonatus
* see comments below ‡
36a. (32b) Thorax with 14 or more chaetigers ............................... 37
   36b. Thorax with 13 or 14 chaetigers, capillary chaetae only in notopodia; TF - (13c)/(14c)

37a. (36a) Thorax with up to 17 chaetigers ............................... 38
   37b. Thorax with 18 or more chaetigers ............................... 39

38a. (37a) Thorax with 15 chaetigers, capillary chaetae only in both notopodia and neuropodia; TF - (15c)/(15c) ............................... 40
   38b. Thorax with 14-17 chaetigers, last 3 thoracic chaetigers with hooded hooks in the neuropodia; TF - (17c)/(0+11c+3h) ............................... 41

39a. (37b) Thorax with up to 18 chaetigers ............................... 42
   39b. Thorax with 20 chaetigers ............................... 43

40a. (39a) Anterior abdominal chaetigers with hooded hooks only in both rami ............................... 44
   40b. Anterior abdominal chaetigers with notopodial capillary chaetae; TF - (18c)/(0+9c+8H) + (4c)/(4h) ............................... 45

41a. (40a) First chaetiger incomplete, neuropodia absent; last thoracic neuropodia with hooded hooks; TF - (17-18c)/(0+15-16c+1m) ............................... 46
   41b. First chaetiger complete, neuropodia present; last 4 thoracic neuropodia with hooded hooks; TF - (18c)/(14c+4h) ............................... 47

42a. (39b) First chaetiger incomplete, neuropodia absent; thoracic neuropodia with capillary chaetae only; TF - (20c)/(0+19c) ............................... 48
   42b. First chaetiger complete, neuropodia present; last 4 thoracic neuropodia with hooded hooks; TF - (16c+4m)/(16c+4h) ............................... 49

Key to Thoracic Formulas
achaetous segment + (thoracic notopodia)/(thoracic neuropodia) + (abdominal notopodia)/(abdominal neuropodia)
c=capillary, h=hooded hooks, e=either, m=mixed fascicle, g=genital spines, s=spatulate, p=paddle-like, (-)=achaetous segment present, 0=without chaetae

Comments
† The presence of a true achaetous segment is somewhat unique within the Capitellidae, being found only in the genus Scyphoproctus and possibly, Pseudonotomastus. The original description for Pseudonotomastus strongly implies that a true achaetous segment is present in the thorax but the images provided are not of a quality that allow for confirmation of this characteristic. The thoracic formula of Pseudonotomastus falls within that of Scyphoproctus, only differing in the incomplete first chaetiger. Also, all specimens collected during the original description were incomplete and thus no description of the pygidium is known. New samples from the type location would be needed to determine the validity of this genus and should be considered for synonymy with Scyphoproctus.

$ The generic diagnosis of Mediomastus Hartman, 1944 was emended by Warren et al. (1994) to expand the thoracic chaetiger range from 10 to 9-11. The thoracic formula for Parheteromastus Monro, 1937 now falls within the expanded thoracic range of Mediomastus. Genetic data will likely be needed to resolve the relationships of these two genera. If the two are found to be synonymous, I believe that Parheteromastus would have priority.

♠ Fauchald (1977) stated that the notopodia of chaetiger 6 (segment 7) in Parheteromastides had a mixed fascicle of capillaries and hooded hooks and the neuropodia had hooks. The original description of Hartmann-Schröder stated that the same chaetiger had a mixed fascicle of capillaries and hooded hooks in the notopodia and capillary chaetae in the neuropodia. Hartmann-Schröder’s description of chaetiger 6 is used in this key.
% Hartmann-Schröder’s original generic description was a little vague, leading to a reduction in the number of thoracic chaetigers in Fauchald’s (1977) diagnosis. Reviewing the description of Leiocapitellides analis and the figures provided, the presence of the eyes on the large prostomium (Fig. 177 in Hartmann-Schröder, 1960), reveal the achaetous segment mentioned in the description to be the peristomium. One can also ascertain that Hartmann-Schröder intended the genus to be comprised of 10 thoracic segments with 9 chaetigers. She continues on with the description (translated) “The last thoracic segment is followed by a segment which is identical in external shape to the thoracic segments (Fig. 178). It has bristles in the notopodia, but ventrally has 1 hook on each side. The abdominal segments that follow are translucent in the front section, finely ringed and end in a ring bulge at the back, which like the thoracic segments, is granulated and opaque.”

The physical similarities of what Hartmann-Schröder called the first abdominal segment to the thoracic segments and the presence of notopodial capillaries and neuropodial hooded hooks, a common feature of the last thoracic segments of many capitellid genera, leads to the generic interpretation of Leiocapitellides used in this key.

This interpretation of Leiocapitellides differs from that given in Magalhães & Blake (2020).

£ Green (2002) emended the generic diagnosis of Mastobranchus to include a possible achaetous segment in the thorax to accommodate a re-evaluation of Mastobranchus loii Gallardo, 1968 and an undescribed Mastobranchus near loii. Mastobranchus loii was redescribed by da Silva & Amaral (2022) and was shown to be regenerating its prostomium, peristomium and 1st chaetiger. The regeneration was missed by Gallardo during the original description and by Green in her interpretation of M. loii. Since all described species lack an achaetous segment in the thorax and the thoracic formula of Mastobranchus near loii also falls within that of the genus Scyphoproctus, one of the only capitellid genus with a true achaetous segment, and is incomplete, the diagnosis of the genus Mastobranchus is emended to include only species with a thoracic achaetous segment absent.

This interpretation of Mastobranchus differs from that given in Magalhães & Blake (2020).

Rullier & Amoureux (1979) did not give a generic diagnosis of Neopseudocapitella, but only described the species. They stated that the first 3 chaetigers with mixed fascicles in the notopodia could be considered as part of the thorax, and the start of the abdomen is marked by a slight contraction, leaving the generic diagnosis loosely at 14 thoracic chaetigers. This led to the genus Neopseudocapitella for its similarity to Pseudocapitella, with 14 thoracic chaetigers, and Neopseudocapitella, however, does not have any fascicles of mixed chaetae reported. Amoureux (1983) made the distinction of the thorax consisting of the chaetigers with capillarly chaetae only, the chaetigers with mixed fascicles marking the start of the abdomen, reducing the generic diagnosis to only 11 thoracic chaetigers.

The presence of 11 thoracic chaetigers with capillary chaetae and numerous anterior abdominal notopodia with mixed fascicles of capillaries and hooded hooks, and the absence of a true achaetous segment in the thorax place Neopseudocapitella within the emended definition of the genus Mastobranchus and should be considered as a synonym of Mastobranchus. The description of Neopseudocapitella brasiliensis matches very well with the description of the newly described Mastobranchus braziliensis da Silva & Amaral, 2022, described from the same region. A review of the type material of Neopseudocapitella brasiliensis would be needed to confirm the characters and determine the proper name and authority of the two species.

This interpretation of Neopseudocapitella differs from that given in Magalhães & Blake (2020).

€ There seems to be some confusion in Fauchald’s (1977) diagnosis of the genus, possibly due to a comment made by Harmelin when comparing Pseudoleiocapitella to Pseudomastus, resulting in a reduction of thoracic chaetigers. Reviewing the original generic diagnosis, species description of Pseudoleiocapitella fawveli and the images provided in Harmelin (1964), it is clear that Pseudoleiocapitella should have 12 thoracic chaetigers. Thoracic chaetigers with notopodial capillaries and neuropodial hooded hooks is a common diagnosis of many capitellid genera, and the change in dentition between chaetigers 11-12 and the remaining chaetigers reinforce this idea. The emended generic diagnosis above is based mostly off of Harmelin’s (1964) original description and corrects the incorrect diagnosis given in Fauchald (1977).

The new generic diagnosis of Pseudoleiocapitella Harmelin, 1964 matches that of Leiochris Augener, 1914, including the dentition of the abdominal hooded hooks with three small teeth in two rows surmounting the main fang, and should possibly be placed in synonymy with Leiochris. A detailed review of the type of Pseudoleiocapitella would be needed to resolve this issue.

This interpretation of Pseudoleiocapitella differs from that given in Magalhães & Blake (2020).

‡ This interpretation of Leiochris differs slightly from that given in Magalhães & Blake (2020) as the mixed fascicle is considered thoracic and not abdominal.

‡ The thoracic formula and generic diagnosis of Nonatus matches that of the genus Dasybranchus, differing only in the degree of fusion of the prostomium and peristomium. A detailed review of the type of Nonatus longilineus to compare the structure and dentition of the abdominal hooded hooks would be needed to determine the validity of the genus Nonatus.

‡ The genus Leiocapitella was emended by Ewing (1984) to accommodate two undescribed species of Leiocapitella. As these species remain undescribed, the generic definition has been emended to only include described species.

This interpretation of Leiocapitella differs from that given in Magalhães & Blake (2020).

◆ This interpretation of Capitobranchus differs from that given in Magalhães & Blake (2020).

Version History
1.0 Key Created. March, 2023 - BMH
2.0 Family key updated. Added comments about genera. September, 2023 - BMH
References


Fauchald, K. 1977. The polychaete worms, definitions and keys to the orders, families and genera. Natural History Museum of Los Angeles County: Los Angeles, CA (USA), Science Series 28: 1-188.


